

Application No. 10/579,444
Amendment dated June 16, 2008
Reply to Office Action of March 27, 2008

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Amendments to the Drawings:

The attached sheet of drawings includes changes to Figure 9. This sheet, which includes Figures 8-11, replaces the original sheet including Figures 8-11. In Figure 9, element 146 has been deleted.

Attachment: Replacement Sheet
Annotated Sheet Showing Changes

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REMARKS/ARGUMENTS

The disclosure and drawings have been amended to overcome the various issues identified by the Examiner. The amendments to the claims include amendments to claim 1, 5 and 14.

The claims in the application have been amended to clarify the operation of claim 1 and to address the objections under 35 U.S.C. 112 second paragraph with respect to claims 5 and 14.

With respect to the drawings, reference character 146 has been deleted from Figure 9 and reference character 112 has been added to the description. The replacement paragraph at line 30 on page 15 has now been corrected. Claims 1, 2 and 4 were rejected under 35 U.S.C. 103(a) as being unpatentable over Lupke et al. US Patent 4,510,013 in view of Chan US Patent 4,789,327.

With respect to Chan, the Examiner argues that Chan includes a cooling plug 51, 52 for setting the plastic pipe in a moving mold tunnel with a cooling plug divided into a first stage and a second stage with the first stage including a separate cooling circuit and control arrangement for removing heat from the plastic to partially set the plastic without excessive cooling thereof. The Examiner further states that the second stage also includes a separate cooling circuit and control arrangement for the further removal of heat from the pipe. The Examiner states that these are responsive to changing conditions in the various stages. This assessment of the Chan disclosure in Applicant's opinion is incorrect.

Chan includes a cooling plug that has a number of annular channels with these channels divided into sections with each section having its own circuit with a coolant discharge and a coolant supply. One such section is shown at the left hand side of Figure 4 with a coolant inlet 53 and a coolant outlet 54. The Chan patent has recognized that a cooling plug having a common or single cooling circuit suffers in that the circuit is relatively long and the cooling fluid is relatively hot at the discharge outlet of the common circuit. To address this particular problem, Chan has designed his cooling plug in sections with each section having its own coolant inlet and coolant outlet.

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Applicant has carefully reviewed the Chan reference and can find no reference to a first stage including a cooling circuit and a temperature control arrangement that cooperate to remove sufficient heat from the plastic pipe to partially set the plastic pipe without excessive cooling thereof. The Chan reference merely provides a cooling plug having a plurality of sections with independent cooling circuits, but there has been no suggestion of a temperature control arrangement associated with the first cooling stage to adjust the heat that is removed from the plastic pipe such that excessive cooling of the pipe is avoided. As noted in the present application, changes in the shape of the pipe that is being extruded varies the ability of the cooling plug to remove heat and if the cooling fluid is maintained when a coupling passes over the first section, the cooling plug will excessively cool and when the double-walled pipe subsequently passes over this section of the cooling plug, excessive heat is removed and damage to the leading portion of the double-walled pipe occurs.

Neither the primary reference nor the secondary reference recognizes the problems associated with the manufacture of pipe having different configurations as the pipe is being extruded. Similarly, these references have not recognized the particular solution and the control arrangement specifically set out in the claims that is responsive to changes in the pipe configuration.

As noted in the present application, the particular pipe molding system problems associated with excessive cooling are avoided and in particular the problems associated with the hardening and even cracking of at least the first or second corrugations in the main body portion of the pipe following a coupling are avoided (see page 8 lines 9 through 20). In addition, the system is more forgiving with respect to the product being produced as well as any changes which occur during the production process (page 18 lines 20 to 22).

The prior art references have not recognized the underlying problems associated with excessive cooling of the pipe due to changes in the shape, or the requirement to significantly alter the cooling capabilities of the system in accordance with changes in the pipe configuration. It is only with the benefit of hindsight and the

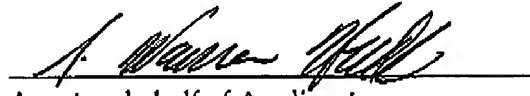
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knowledge of the present description that one would consider combining the references in an attempt to arrive at the present system. Such hindsight analysis is not the appropriate test of obviousness.

In view of the above, reconsideration and allowance of the application is requested.

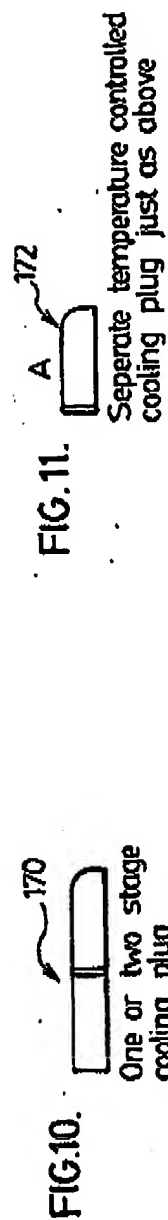
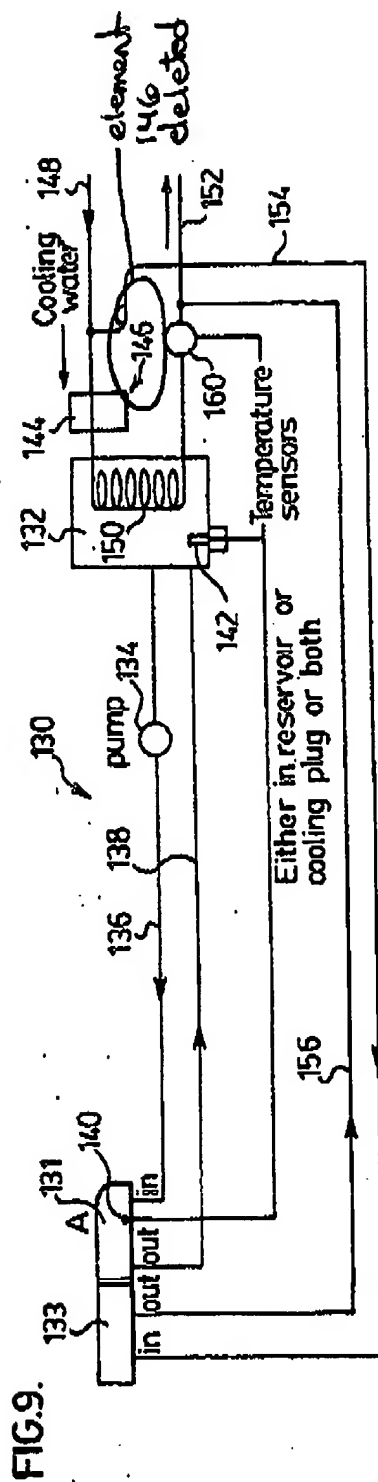
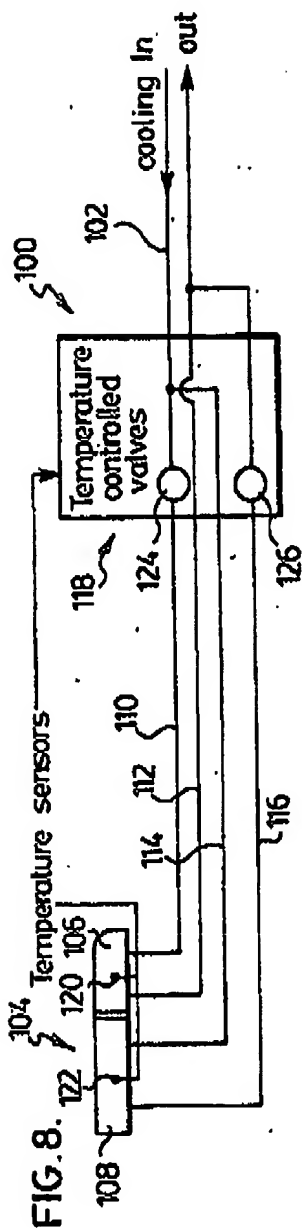
Respectfully submitted,



Agent on behalf of Applicant
S. Warren Hall
Registration No. 30,350
(416) 368-8313

WH/sjh

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